

WHAT IS CLAIMED IS:

1. A method of generating a transmission signal, comprising the steps of:

5 determining non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis
10 corresponding to imaginary-part signal components;

determining compensation signal points in the two-dimensional plane in response to a signal error caused by digital quadrature modulation if the non-compensation signal points are used, the non-compensation signal points and the compensation
15 signal points being point-symmetry;

sequentially assigning digital information signal pieces to one of the compensation signal points in response to contents of the digital information signal pieces; and

subjecting the digital information pieces to a modulation
20 process including digital quadrature modulation in response to the assignment given by the assigning step to generate a radio-frequency transmission signal.

2. A method as recited in claim 1, wherein the compensation
25 signal points provide compensation for an error in the radio-frequency transmission signal which is caused by one of a phase

difference between an in-phase signal and a quadrature signal, an amplitude difference between the in-phase signal and the quadrature signal, and an error in a quadrature relation between the in-phase signal and the quadrature signal.

5

3. A method as recited in claim 1, wherein the compensation signal points provide compensation for an error in the radio-frequency transmission signal which is caused by a timing difference between an in-phase signal and a quadrature signal.

10

4. A method of generating a transmission signal, comprising the steps of:

determining first non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

15

determining second non-compensation signal points in the two-dimensional plane without considering the signal error caused by digital quadrature modulation;

20

determining first compensation signal points in the two-dimensional plane for a first subcarrier in response to a signal error caused by digital quadrature modulation if the first non-compensation signal points are used, the first non-compensation signal points and the first compensation signal points being point-

25

symmetry;

determining second compensation signal points in the two-dimensional plane for a second subcarrier in response to a signal error caused by digital quadrature modulation if the second non-compensation signal points are used, the second non-compensation signal points and the second compensation signal points being point-symmetry, the second subcarrier being equal in frequency to the first subcarrier and being different in polarity from the first subcarrier;

10 sequentially assigning first digital information signal pieces to one of the first compensation signal points in response to contents of the first digital information signal pieces;

sequentially assigning second digital information signal pieces to one of the second compensation signal points in response to contents of the second digital information signal pieces; and

15 subjecting the first digital information pieces and the second digital information pieces to a modulation process including digital quadrature modulation in response to the assignments given by the assigning steps to generate a radio-frequency transmission signal containing the first and second subcarriers.

5. An apparatus for generating a transmission signal, comprising:
means for determining non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis

corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

means for determining compensation signal points in the two-dimensional plane in response to a signal error caused by digital quadrature modulation if the non-compensation signal points are
5 used, the non-compensation signal points and the compensation signal points being point-symmetry;

means for sequentially assigning digital information signal pieces to one of the compensation signal points in response to
10 contents of the digital information signal pieces; and

means for subjecting the digital information pieces to a modulation process including digital quadrature modulation in response to the assignment given by the assigning means to generate a radio-frequency transmission signal.

15

6. An apparatus for generating a transmission signal, comprising:

first means for storing information representing assignment of states of a signal piece to signal points predetermined in response to an estimated signal error caused by digital quadrature modulation
20 in the absence of correction;

second means for assigning an input information signal piece to one of the signal points in response to a state of the input information signal piece according to the information stored in the first means to convert the input information signal piece into first
25 and second baseband signal pieces; and

third means for subjecting the first and second baseband

- signal pieces generated by the second means to a modulation process including digital quadrature modulation to convert the first and second baseband signal pieces into a piece of a modulation-resultant transmission signal from which a signal error caused by
- 5 the digital quadrature modulation is removed.

RECEIVED